3. Description of Sphyrocephalus labrosus*, a New Bat from Old Calabar River, Western Africa. By Andrew Murray, Ass. Sec. R. Horticultural Society.

(Plate I.)

Pteropini.

Sphyrocephalus, nov. gen.

Dental formulary :—

		Molars.	
Incisors.	Canines.	Premolars ?	True molars ?
$\frac{4}{4}$	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{2}{3}$

Head very large and oblong; the lips largely developed and expanded. Ears rather large, without tragus. Thumb and index-finger of hand unguiculate, the other fingers without claws. Tail wanting.

Sphyrocephalus labrosus, sp. nov.

Brown, with a few whitish hairs at the base of the ears. The head very large, massive, half as long as the whole body, oblong, and as broad at the muzzle as at the top of the head, with some resemblance to a hammer, whence the name hammer-headed (*Sphyrocephalus*), rather more than twice as long as deep; ears rather large, destitute of tragus; eyes rather large; eyelids provided with eyelashes; nostrils large and tubular; lips extraordinarily developed; both upper and lower lips of a very smooth semi-muco-membranous texture, corrugated and tuberculated at the margins; the upper lip with a tuberculated prominence in the line of the two outer incisors, and a more elongated tuberculated ridge further up, in the line of the two inner incisors; the external lateral margin expanded into a sort of stiff semi-cupshaped flap with a tuberculated edge, rising to meet the nostril and then descending, following its lower edge, and terminating in a curved scroll-like coil in the nostril.

The same semi-muco-membranous lip is spread over the front of the lower jaw, forming a sort of chin. The skin in the neighbourhood of the lips, and extending upwards and backwards along the nasal bones, is covered with the same sort of fine velvety down which surrounds a horse's nostrils; the hair on the rest of the head is flocky; on the downy portion there are on the sides of the upper

* Since this paper was in print, the last number of the 'Proceedings of the Academy of Natural Sciences of Philadelphia' has been received in this country (the first copies arrived on 19th February, 1862); and in it I find a description of a new Bat, which probably belongs to this species, by Dr. Harrison Allen (Proc. Acad. Nat. Sc. Phil. July 1861, p. 156). It is said to be taken from a specimen collected by M. Du Chaillu, and is named by Dr. Allen *Hypsignathus monstrosus*. If it is the same species, of course Dr. Allen's name must take precedence. His description does not quite correspond with mine, but, judging from the description of the nose, may, perhaps, have been taken from a dried skin, whereas mine is from a fine example in spirits. M. Du Chaillu has exhibited no specimen of this Bat in England.

lip three rows of papillæ, each with a long whisker-hair springing from it. In the specimen before us these papillæ are arranged four in the two first rows and three in the last; similar papillæ and hairs run up the downy space covering the long nasal bones, in three rows, past the eyes and quite to the forehead, numbering each nine or ten papillæ, the middle row being shorter than the two others. The gape of the mouth is large, extending back fully a third of the head; the lip does not encroach on the outside of the face along the gape; it is only directly in front that it is so much developed; the upper lip is connected with the gum by a broad thick ridge uniting them together in the line of the symphysis of the intermaxillary bones.

The disposition of the teeth is as follows:—

They are all well separated from each other, none touching each other except, perhaps, the last molars; the incisors of the upper jaw are minute rounded points; in the lower jaw they are equally minute, but transversely oblong and bilobed. The canine teeth in both are well developed and of the usual form; beyond the canine there is a minute tooth (a mere point) in the lower jaw which is wanting in the upper jaw; the next tooth beyond it is almost exactly of the form of the canine, and is probably a pre-molar; the remaining teeth, two in the upper and three in the lower jaw (probably true molars), have their crown divided longitudinally; in the upper jaw each ridge slopes backwards, in the under jaw the external ridge is bilobed. The palate has strong, elevated, transverse ridges running across from interspace to interspace between each tooth. The tongue is rather large, and covered with a sort of tessellated pavement of large flat papillæ; it is free very far back. Under it and lying in the hollow of the mouth, occupying the whole breadth for a short space in front between the rami of the lower jaw, is a very curious membrane fringed with slips or plaits—a sort of second tongue, calling to recollection a somewhat similar organ or structure under the tongue of the Loris and Lemur. In these it assumes the form of an aponeurotic lamina, which is divided at its anterior thinner end into filaments or slips. "This arrangement (a development of the frenum of the tongue)," says Van der Hoeven, "has been described incorrectly, in my judgment, as though the tongue were double, or even as if a bird's tongue were under the mammalian tongue." It may be a development of the frenum, because two things connected together, although at opposite ends, may always be said to be parts of the same thing however distant they may be. But I would only observe that in the present instance the frenum of the tongue is situated very far back, and it seems to me that it may just as possibly be a development of the floor of the mouth as of the frenum of the tongue. I do not suppose that Dr. Van der Hoeven would think it necessary to look elsewhere than to the walls of the œsophagus to find the structure from which the elongated papillæ lining the œsophagus, in the hawk-billed turtle for instance, had been developed. There is a tendency to similar structure in other parts than the tongue in many animals—on the palate and back of the mouth, for example; and I should not be disposed to seek further than the place from

which it springs for the source of this development. It does not extend much further back than the lower canine teeth; but there is a slight plait or perceptible line running on each side all the way to the back of the mouth, giving the appearance of a second thin flat tongue lying in the hollow of the mouth, tied down like the tongue of a crocodile; but the separation here is a mere trace, and it is only the fringed margin in front which is free.

The neck is distinct, and the skin has the appearance of having some cellular space between it and the muscles.

The body is oblong and compact; the ribs descend far, and the lower ribs are very large; the stomach is moderate in size, furnished internally with several large transverse folds; the small intestines are not very long; there is no cæcum.

The arms have the thumb and index unguiculate, the rest of the fingers are without claws; the thumb has two phalanges, the rest have three phalanges. The thumb is united to the wing by a membrane stretching on both sides over the whole of the proximal and half of the distal phalanx; the proximal phalanx of the thumb is shorter than the distal. The winged membrane is not extended across the back, but is very ample; the winged space between the third and fourth fingers, and between the fourth and the body, has in its middle numerous longitudinal bundles of muscular fibre interwoven without attachments, and one or two similar transverse bundles; these are probably for the purpose of assisting in the folding of the wing. Along these bundles of muscular fibre the membraneous wing is closely wrinkled; and there is little doubt that they will also strengthen the membrane where they occur.

The hind feet are uniform and all unguiculate; they are united to the body by an interfemoral membrane, which has a single large bundle of muscular fibres stretching obliquely across from the foot to the coccyx.

The testicles are situated under the skin on each side of the male organ, and are round.

There is no tail.

The length of the whole body, in the specimen from which the above description is taken, is nearly 7 inches; the length of the head $3\frac{1}{4}$ inches, its depth about $1\frac{1}{4}$ inch. The stretch of wings is 28 inches across.

The most remarkable features in this animal are its large hammer-shaped head, and the great external development of its lips. Its whole structure is essentially that of a Pteropine Bat, with some modifications showing a tendency towards the *Rhinolophi*. No species having any of the nasal appendages peculiar to that section of the Bats has yet been found among the Pteropine Bats. They are strictly frugivorous, and have the nose like that of a fox or dog. The present species, although it has not any nasal appendages, has labral expansions which may possibly be analogous to them, and the animal may possibly have peculiar habits to which the structure of these organs is especially adapted.

Unfortunately, in the only specimen yet received, the stomach and

intestines were wholly empty; so that we cannot speak of its food with positive certainty. The teeth are Pteropine in character, but not so absolutely so as to preclude the possibility of this creature being at least partially insectivorous, the molars showing a tendency to mammillation on the external side of the longitudinal ridges into which they are separated. The large folds in the interior of the stomach seem to point to a vegetable diet.

The sublingual fringed membrane is also an interesting peculiarity, not only on account of its rarity, but because one of the few other instances where it has been noticed is in an animal having no one thing in common with the present, except that of living in the same country. We sometimes see this happen; an abnormal structure or peculiarity occurring in an animal restricted to one country will be found repeated in some other animal of that country no way connected with or allied to it.

This Bat was sent to me by my excellent friend, the Rev. Wm. C. Thomson, one of the missionaries of the United Presbyterian Church of Scotland, stationed at Old Calabar—a true Christian, an excellent naturalist, and one whose devotion to the cause he has undertaken, viz. the amelioration of the African negro, has been proved by the greatest sacrifices from his youth upwards.

Prof. Owen communicated the first part of his paper on the Aye-aye (*Chiromys madagascariensis*, Cuv.), including an introductory historical sketch of its discovery and the various opinions respecting its nature and affinities set forth by naturalists from Buffon to the present time. After commenting on the chief of these, the author proceeded to narrate the circumstances under which the subject of his descriptions, a nearly full-grown male, had been obtained from Madagascar, and prepared for dissection, by the Hon. H. Sandwith, M.D., C.B., whilst Colonial Secretary at the Mauritius. The habits of the Aye-aye during the period in which it lived a captive at the Mauritius with Dr. Sandwith, and also the habits of other individuals that for a time were kept alive in the island of Reunion, by MM. Lienard and Vinsor, in 1855, were next noticed. The specimen submitted to Prof. Owen, having been transmitted well preserved in spirit, afforded the means of a minute external description. The extremities were described as follows:—"The fore leg turns freely in the prone and supine position; it is pentadactyle: the innermost digit stands out at an acute angle with the index, and is opposable to the other digits, making a prehensile hand, but in a less perfect degeee than in the old-world or 'catarrhine' quadrumana. The second, fourth, and fifth digits have the ordinary thickness,—the fourth being almost twice the length of the second. The third or middle finger is singularly attenuated, is rather shorter than the fourth digit, and is terminated by a slender curved claw. It is this seemingly atrophied digit which the Aye-aye inserts into the burrows of the wood-boring caterpillars, after it has gnawed down to and exposed them by its strong fore teeth, in order to extract the

grub. The hind limb is longer than the fore limb, and is terminated by a more perfect hand—the 'hallux' or thumb being stronger, and set at a more open angle with the other toes, and these being more similar to each other in length and thickness: the thumb has a flat, broad nail." Prof. Owen observed that, from the external characters of the Aye-aye, it might be inferred that it was of arboreal habits, the limbs being constructed chiefly for grasping, especially the hinder pair, as in all good climbers. The circular open eye, large iris, and wide pupil, reducible to a minute point when contracted, indicated a climber of nocturnal habits. The large and perfect ears bespoke the acuteness of their sense. The tail, long and bushy, but not prehensile, might add to the protective non-conducting covering of the well-clothed body during sleep. Prof. Owen then proceeded to describe the skeleton of the Aye-aye.

The reading of the conclusion of this paper was adjourned until the next meeting, to take place on the 28th instant.

January 28, 1862.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Dr. P. L. Sclater stated that he had received under his care a second collection of specimens of natural history forwarded by Capt. J. H. Speke, Commander of the East-African Expedition, from his camp at Duthumi, October 22nd, 1860. The contents of the collection were as follows:—

1. Heads of the following Antelopes:—The Pallah (*Antilope melampus*); the Waterbuck (*Antilope ellipsiprymna*); the Brindled Gnu (*Catoblepas gorgon*); and the Reed Antelope (*Heleotragus reduncus*).
2. Head of a Wart-hog (*Phacochœrus æliani*).
3. Portions of the skin of a Monkey (*Cercopithecus*, sp.) in a bad state, not determinable.
4. Skins of birds:—

Ixos aurigaster, Vieill.	*Turtur delalandii*.
Coracias caudata.	*Peristera chalcospilos*.
Treron delalandii.	*Numida mitrata*.

5. Two skins of fishes—a species of *Clarias* and a fish belonging to the family *Characini*.

The following note was sent with them:—

"These were all shot in the countries of Uzaramo and Ukhutu, near the junction of the Kurgen with the Mgeta rivers.

"*Note*.—Great numbers and varieties of animals are to be found in these districts, as also to the northward and southward, where the